

Claims

- 1) A lift including a load carrier;

a hydraulic ram operable to displace said load carrier in a substantially vertical direction; and

a counterbalance operable to reduce the load imposed by said load carrier on said hydraulic ram,

said lift being characterised in that said counterbalance includes a chamber of substantially constant volume housing a pressurised fluid.
- 2) A lift as claimed in claim 1 wherein said counterbalance is a stroke-based device as herein defined.
- 3) A lift as claimed in claim 1 or claim 2 wherein said counterbalance is formed in unit with said hydraulic ram.
- 4) A lift as claimed in claim 3 wherein said counterbalance is defined, in part, by an annular chamber provided about said hydraulic ram.
- 5) A lift as claimed in claim 4 wherein said counterbalance further includes an annular slider having an upper surface and a lower surface, said slider being displaceable within said annular chamber with movement of said hydraulic ram, wherein said slider has axial ports therein linking said upper surface to said lower surface, and wherein the area of said lower surface is greater than the area of said upper surface.

- 6) A lift as claimed in any one of the preceding claims wherein said pressurised fluid comprises a pressurised gas.
- 7) A lift as claimed in claim 6 wherein said pressurised gas comprises nitrogen.
- 8) A lift as claimed in any one of the preceding claims wherein said counterbalance is constructed and arranged to provide a counterbalance effect of less than the weight of said load carrier.
- 9) A lift as claimed in claim 8 wherein said counterbalance is configured to provide a counterbalance effect of 70 to 90% of the weight of said load carrier.
- 10) A drive unit for a hydraulic lift, said drive unit including an hydraulic ram having a cylinder and a piston extendible and retractable with respect to said cylinder, said unit being characterised in that it further includes a counterbalance integral with said hydraulic ram, said counterbalance including a chamber of substantially constant volume housing a pressurised fluid.
- 11) A drive unit as claimed in claim 10 wherein said chamber of substantially constant volume is annular in form and arranged about the axis of said cylinder.
- 12) A drive unit as claimed in claim 11 wherein said chamber is defined, in part, by said piston and by said cylinder.
- 13) A drive unit as claimed in any one of claims 10 to 12 wherein said pressurised fluid comprises a pressurised gas.

- 14) A method of reducing the power requirement of an hydraulic lift which includes a load carrier and an hydraulic ram operable to displace said load carrier in a substantially vertical direction,
- said method including positioning a counterbalance so as to reduce the load imposed by said load carrier on said hydraulic ram, said counterbalance including a chamber of substantially constant volume housing a pressurised fluid.
- 15) A method as claimed in claim 14 further including providing said counterbalance in unit with said hydraulic ram.